

M. Kodan, et al.  
USSN: 09/937,796  
Page 2

Please amend the subject application as follows:

IN THE CLAIMS

Please **amend** claims 1, 2, 5-20, 26-35, and 38-40 in accordance with the Summary of the Claims section, *infra*. Deletions are shown with a strikethrough and added matter is shown with underlining.

SUMMARY OF THE CLAIMS

Claim 1 (currently amended) An optical control device that does not use a color filter; the device comprising:

- a first substrate having a plurality of ~~with at least one~~ light output layers;
- a second substrate with a light transmitting function, positioned opposite to the first substrate;
- a liquid crystal sandwiched between the first and second substrates,
- first electrodes, on one of the first and second substrates, for applying multiple scan signals to the liquid crystal for an image display;
- second electrodes, on the other of the first and second substrates, for applying multiple signal voltages to the liquid crystal for an image display; and
- a layer with a light polarizing function on the first substrate,

wherein:

each of the plurality of light output layers corresponds to only one of the first electrodes and is arranged in stripes and extends in the same direction as the first electrodes; and the first substrate, the plurality of light output layers, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order, and

wherein all of the plurality of ~~at least one~~ light output layers shine when a specified time has elapsed such that the liquid crystal between each of the first and second substrates is able to respond to the scan signals and signal voltages to modulate light intensity transmitted therethrough to a desired display intensity after a complete set of data signals for each scan line is transmitted to the first electrodes and extinguishes before a succeeding complete set of data signals for each scan line is transmitted.

M. Kodan, et al.  
USSN: 09/937,796  
Page 4

Claim 2 (currently amended) An optical control device that does not use a color filter, the device comprising:

a first substrate having a plurality of~~with at least one~~ light output layers;

a second substrate with a light transmitting function, positioned opposite to the first substrate;

multiple active elements on one of the first and second substrates;

gate electrodes, on the one of the first and second substrates, for applying multiple scan signals to a liquid crystal sandwiched between the first and second substrates for an image display; and

source electrodes, on the other of the first and second substrates, for applying multiple signal voltages to the liquid crystal for an image display,

wherein:

each of the plurality of light output layers corresponds to only one of the gate electrodes and is arranged in stripes and extends in the same direction as the gate electrodes;

each of the plurality of light output layers shines simultaneously with adjacent light output layers, but with a different wavelength from those of the adjacent light output layers; and

all of the plurality of light output layers shine when a specified time has elapsed such that the liquid crystal between each of the first and second substrates is able to respond to the scan signals and signal voltages to modulate light intensity transmitted therethrough to a desired display intensity after a complete set of data signals for each scan line is transmitted to the gate electrodes and extinguish before a succeeding complete set of data signals for each scan line is transmitted.

Claim 3 (original) The optical control device as defined in claim 2, wherein the active elements are provided on the second substrate.

Claim 4 (previously presented) The optical control device as defined in claim 2, further comprising:

a layer with a light polarizing function on the first substrate.

Claim 5 (currently amended) The optical control device as defined in claim 1, wherein:

each of the plurality of light output layers provided on the first substrate is formed by a light emitting layer composed of at least one of an organic EL light emitter, an inorganic EL light emitter, and an FED light emitter; and

the light emitting layer shines with application of a voltage across the first electrodes and the second electrodes.

Claim 6 (currently amended) The optical control device as defined in claim 2, wherein:

each of the light output layers provided on the first substrate is formed by a light emitting layer composed of at least one of an organic EL light emitter, an inorganic EL light emitter, and an FED light emitter;

the gate electrodes, the light emitting layer, and the source electrodes are provided in this order on the first substrate; and

the light emitting layer shines with application of a voltage across the gate electrodes and the source electrodes.

Claim 7 (currently amended) The optical control device as defined in claims 1, wherein

each of the plurality of light output layers includes an optical waveguide and a light source coupled to the optical waveguide and positioned in a non-display section area.

Claim 8 (currently amended) The optical control device as defined in claim 2, wherein

the each of the light output layers includes an optical waveguide and a light source coupled to the optical waveguide and positioned in a non-display section area.

Claim 9 (currently amended) The optical control device as defined in claim 1, wherein

each of the light output layers shines with spectrum periodically varying according to a position of the light output layer.

Claim 10 (currently amended) The optical control device as defined in claim 9, wherein the each of the plurality of light output layer shines with spectrum periodically varying for each pixel.

Claim 11 (currently amended) An optical control device-driving method, comprising the steps of:

using an optical device that does not use a color filter, the device including:

a first substrate having a plurality of ~~with at least one~~ light output layers;

a second substrate with a light transmitting function, positioned opposite to the first substrate;

a liquid crystal sandwiched between the first and second substrates;

first electrodes, on one of the first and second substrates, for applying multiple scan signals to the liquid crystal for an image display;

second electrodes, on the other of the first and second substrates, for applying multiple signal voltages to the liquid crystal for an image display; and

a layer with a light polarizing function on the first substrate,

wherein:

each of the plurality of light output layers corresponds to only one of the first electrodes and is arranged in stripes and extends in the same direction as the first electrodes; and

the first substrate, the plurality of light output layers, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order;

setting such that each of the plurality of light output layer shines for a duration of 5 to 70% of each display frame time,

shining all of the plurality of ~~at least one~~ light output layers when a specified time has elapsed such that the liquid crystal between each of the first and second substrates is able to respond to the scan signals and signal voltages to modulate light intensity transmitted therethrough to a desired display intensity after a complete set of data signals for each scan line is transmitted to the first electrodes; and

extinguishing all of said plurality of at least one light output layers before a succeeding complete set of data signals for each scan line is transmitted.

Claim 12 (currently amended) The optical control device-driving method as set forth in claim 11, wherein each of the light output layers shines for a duration of 15% to 40% of each display frame time.

Claim 13 (currently amended) An optical control device-driving method, the method comprising the steps of :

providing an optical device; wherein the optical device includes:

a first substrate having a plurality of ~~with at least one~~ light output layers;

a second substrate with a light transmitting function, positioned opposite to the first substrate;

a liquid crystal sandwiched between the first and second substrates;

first electrodes, on one of the first and second substrates, for applying multiple scan signals to the liquid crystal for an image display;

second electrodes, on the other of the first and second substrates, for applying multiple signal voltages to the liquid crystal for an image display; and

a layer with a light polarizing function on the first substrate,

wherein:

each of the plurality of light output layers corresponds to only one of the first electrodes and is arranged in stripes and extends in the same direction as the first electrodes; and

the first substrate, the plurality of light output layers, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order;

shining all of the the light output layers when a specified time has elapsed such that the liquid crystal between each of the first and second substrates is able to respond to the scan signals and signal voltages to modulate light intensity transmitted therethrough to a desired display intensity after a complete set of data signals for each scan line is transmitted to scan lines; and

extinguishing all of said light output layers before a succeeding complete set of data signals for each scan line is transmitted.

Claim 14 (currently amended) An optical control device-driving method, the method comprising the steps of:

providing an optical device, wherein the optical device includes:

a first substrate having a plurality of ~~with at least one~~ light output layers,

a second substrate with a light transmitting function, positioned opposite to the first substrate;

a liquid crystal sandwiched between the first and second substrates;

electrodes, on one of the first and second substrates, for applying multiple scan signals to the liquid crystal for an image display;

electrodes, on the other of the first and second substrates, for applying multiple signal voltages to the liquid crystal for an image display; and

a layer with a light polarizing function on the first substrate,

wherein:

each of the plurality of light output layers corresponds to only one of the electrodes that apply scan signals to the liquid crystal and is arranged in stripes and extends in the same direction as the electrodes for applying the multiple scan signals; and

the first substrate, the plurality of light output layers, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order;

shining all of the plurality of light output layers when a specified time has elapsed such that the liquid crystal between each of the first and second substrates is able to respond to the scan signals and signal voltages to modulate light intensity transmitted therethrough to a desired display intensity after a complete set of data signals for each scan line is transmitted to scan lines; and

extinguishing all of said plurality of light output layers before a succeeding complete set of data signals for each scan line is transmitted;

wherein each of the plurality of light output layers shines with a different wavelength from those of adjacent light output layers; and  
more than one of the plurality of light output layers that shine with mutually different wavelengths are caused to shine simultaneously.

Claim 15 (original) The method as defined in claim 14, wherein  
each of the plurality of light output layers is either red, green, or blue so that red, blue, and green repeat periodically.

Claim 16 (currently amended) The optical control device defined in claim 2, wherein  
the first substrate, the plurality of light output layers, the liquid crystal, and the second substrate are arranged in this order.

Claim 17 (currently amended) The optical control device defined in claim 2, wherein  
each of the plurality of light output layer is adjusted in terms of luminance for each gate electrode.

Claim 18 (currently amended) The optical control device as defined in claim 2,  
wherein  
each of the plurality of light output layers is adjusted in terms of luminance in accordance with a maximum luminance which is based on the signal voltages applied to the source electrodes.

Claim 19 (currently amended) The optical control device defined in claim 2, wherein  
each of the plurality of light output layer shines with spectrum periodically varying according to a position of the light output layer.

Claim 20 (currently amended) The optical control device as defined in claim 19,  
wherein  
each of the plurality of light output layers shines with spectrum periodically varying for each pixel.



Claim 21 (previously presented) The optical control device as defined in claim 1, wherein the layer with the light polarizing function is provided on the light output layer.

Claim 22 (previously presented) The optical control device as defined in claim 4, wherein the layer with the light polarizing function is provided on the light output layer.

Claim 23 (previously presented) The optical control device as defined in claim 11, wherein the layer with the light polarizing function is provided on the light output layer.

Claim 24 (previously presented) The optical control device as defined in claim 13, wherein the layer with the light polarizing function is provided on the light output layer.

Claim 25 (previously presented) The optical control device as defined in claim 14, wherein the layer with the light polarizing function is provided on the light output layer.

Claim 26 (currently amended) The optical control device as defined in claim 1, wherein each of the plurality of light output layers is adjusted in terms of luminance to a maximum luminance of the data signals for each scan line.

Claim 27 (currently amended) The optical control device as defined in claim 2, wherein each of the plurality of light output layers is adjusted in terms of luminance to a maximum luminance of the data signals for each scan line.

Claim 28 (currently amended) The method as defined in claim 11, comprising the step of adjusting each of the plurality of light output layers, corresponding to each scan line, in terms of luminance to a maximum luminance of the data signals for each scan line.

Claim 29 (currently amended) The method as defined in claim 13, comprising the step of adjusting each of the plurality of light output layers, corresponding to each scan line, in terms of luminance to a maximum luminance of the data signals for each scan line.

Claim 30 (currently amended) The method as defined in claim 14, comprising the step of adjusting each of the plurality of light output layers, corresponding to each scan line, in terms of luminance to a maximum luminance of the data signals for each scan line.

Claim 31 (currently amended) The optical control device as defined in claim 26, wherein a transmittance of the liquid crystal is controlled according to the maximum luminance of the light output layer corresponding to ~~and~~ the data signals for each scan line.

Claim 32 (currently amended) The optical control device as defined in claim 27, wherein a transmittance of the liquid crystal is controlled according to the maximum luminance of the light output layer corresponding to ~~and~~ the data signals for each scan line.

Claim 33 (currently amended) The method as defined in claim 28, wherein a transmittance of the liquid crystal is controlled according to the maximum luminance of the light output layer corresponding to ~~and~~ the data signals for each scan line.

Claim 34 (currently amended) The method as defined in claim 29, wherein a transmittance of the liquid crystal is controlled according to the maximum luminance of the light output layer corresponding to ~~and~~ the data signals for each scan line.

Claim 35 (currently amended) The method as defined in claim 30, wherein a transmittance of the liquid crystal is controlled according to the maximum luminance of the light output layer corresponding to ~~and~~ the data signals for each scan line.

Claim 36 (previously presented) The optical control device as defined in claim 31, wherein a transmittance of the liquid crystal includes 100%.

Claim 37 (previously presented) The optical control device as defined in claim 32, wherein a transmittance of the liquid crystal includes 100%.

Claim 38 (currently amended) The method~~optical control device~~ as defined in claim 33, wherein a transmittance of the liquid crystal includes 100%.

Claim 39 (currently amended) The method~~optical control device~~ as defined in claim 34, wherein a transmittance of the liquid crystal includes 100%.

Claim 40 (currently amended) The method~~optical control device~~ as defined in claim 35, wherein a transmittance of the liquid crystal includes 100%.